

CalESCO

CALIFORNIA EARTH SCIENCE CORPORATION

1318 SECOND STREET, SUITE 27 / SANTA MONICA, CALIFORNIA 90401 / TELEPHONE 395-4528, AREA CODE 213

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Fault Tectonics and Earthquake Hazards in the Peninsular  
Ranges, Southern California, EREP Investigation 463

E7.3-11.134

NASA-CR-135681

NASA, Ames Research Center  
Mail Code 241-1  
Moffett Field, CA 94035

Attention: Mr. Gabriel Fox  
Contracting Officer

Gentlemen:

California Earth Science Corporation (Cal ESCO) is pleased to submit its 4th  
Monthly Progress Report on the application of Skylab imagery to analysis of  
fault tectonics and earthquake hazards in the Peninsular Ranges, southern  
California under NASA contract No. NAS 2-7698.

Summary Outlook

The principal plans for the immediate future are to continue analysis of images  
from SL1/SL2. The milestone plan provides a time-oriented schedule of the  
entire effort to be performed.

Significant Progress

1. Black-and-white imagery from the 190A camera was received in the form of  
70mm positive transparencies. As yet, colored imagery and the 9 x 9 in.  
transparencies have not been received.
2. Negatives of the 190A positive transparencies and enlarged prints have been  
made of selected images. Calibrations have been made of the black-and-white  
film to be used for intermediate separations in the enhancement processes.
3. A preliminary survey has been made of the spectral reflectivities of various  
types of soils and vegetations so as to determine which combinations of  
spectral bands may be most effectively combined for enhancement.

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EARTHQUAKE HAZARDS IN THE PENINSULAR  
RANGES, SOUTHERN CALIFORNIA Monthly  
Progress (California Earth Science Corp.,  
Santa Monica.) 3 p HC \$3.00

4. The multispectral 190A images of the Salton Sea area are being enhanced by selective subtraction and by pseudocolor techniques to determine which type of enhancement is most effective for emphasizing the Blue Cut fault -- a relatively subtle fault as viewed from orbit.
5. Tapes containing S192 data format have been read successfully and the test images generated.
6. SO 192 data of the test site obtained during the SL1/SL2 mission were ordered on September 13, 1973.
7. Field investigations were conducted September 15-17 and September 28-30 to collect ground truth data. The San Andreas/Banning fault is visible in Skylab imagery owing to the presence of phreatophytes on the north side of the fault, which acts as a ground water barrier.

The Blue Cut fault, which is very apparent on Skylab imagery, is not obvious for the most part on the ground, from light aircraft observations, or in RB57 photos. It is believed that the perspective of the Skylab photo allows integration of widely spaced portions of the fault where discontinuities of lithology or structure exist.

The Palm Canyon fault is apparent in Skylab photos because of the difference in the texture of surface outcrops.

8. On September 24, 1973, Dr. Leo Popoff, technical monitor from NASA/Ames, visited CalESCO and The RAND Corp. to review progress and plans under the subject contract.
9. On September 25, 1973, a meeting was held with Dr. Doug Morton, U.S. Geological Survey, who described mapping of active faults in southern California currently in progress by The Survey and The California Division of Mines and Geology.

#### Expected Accomplishments, Current Month

1. Analysis of SL1/SL2 imagery will be continued.
2. Pseudocolor transformations from selected bands will be produced.

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3. The supporting studies will be continued.
4. Analysis of the configuration of digital filters to apply to the S192 data will be performed to enhance lineations.

Travel Summary and Plans

Dr. Merifield will visit NASA/Ames for the purpose of selecting pertinent U-2 photos of the test site and conferring with John Tremor and Angelo Margozi. On the same trip, geologists with the U.S. Geological Survey, Menlo Park, who are currently engaged in the project to map active faults in southern California will be visited.

Field checks of faults imaged by SL1/SL2 will continue during October.

Very truly yours,

CALIFORNIA EARTH SCIENCE CORPORATION



Paul M. Merifield, Ph.D.  
Principal Investigator

cc: National Aeronautics and Space  
Administration  
Scientific and Technical Information Facility  
Code KS  
Washington D.C. 20546

Mr. John W. Tremor  
NASA, Ames Research Center  
Moffett Field, CA 94035

NASA Manned Spacecraft Center  
Attn: Martin Miller, Mail Code TF6  
Houston, TX 77058

NASA Manned Spacecraft Center  
Earth Observations Division  
Attn: V. M. Dauphin, Mail Code TF  
Houston, TX 77058